

**WHAT IS CLAIMED IS:**

1. A gaming machine comprising:  
means for receiving a wager;  
5 a system memory containing physical object data and simulation rule data;  
a display;  
a central processor for processing said physical object data and said simulation  
world data to produce a realistic depiction of gaming activity on said  
display; and  
10 means for awarding a payoff based on an outcome of said gaming activity.
2. The gaming machine of claim 1 further comprising a 3D processor interacting  
with said central processor to facilitate the production of said real-world gaming activity  
on said display.
- 15 3. The gaming machine of claim 1 where said physical object data includes data  
relating to the mass and dimensions of at least one simulated object.
4. The gaming machine of claim 1 wherein said simulation rule data includes data  
20 relating to a simulated gaming world and data relating to rules for interaction between  
said physical object data and said simulated gaming world data.
5. The gaming machine of claim 4 wherein said gaming machine is adapted to  
display three-dimensional simulations of gaming activities.
- 25 6. The gaming machine of claim 1 wherein said processor is adapted to firstly use  
said physical object data and said simulation rule data to mathematically model said  
gaming activity and to secondly enable the display of said realistic depiction on said  
display.
- 30 7. The gaming machine of claim 1 wherein said gaming activity is a sport and said  
physical object data relates to one or more participants in said sport.

8. A method of operating a gaming machine comprising:  
accepting a wager;  
accessing physical object data;  
5 accessing simulation rule data;  
mathematically modeling game actions of one or more physical objects within a  
simulation world using said physical object data and said simulation rule  
data;  
displaying a visual depiction of said game actions;  
10 determining if said game actions meet winning conditions; and  
awarding a payoff if said game actions meet winning conditions.
9. The method of claim 8 further comprising accessing motion capture data and  
using said motion capture data while displaying said visual depiction.
- 15 10. The method of claim 8 wherein mathematically modeling game actions includes  
mathematically modeling sports actions.
11. The method of claim 8 wherein mathematically modeling game actions comprises  
20 applying said simulation rule data to said physical object data to result in a realistic  
mathematical model of real-world physical object interactions.
12. The method of claim 8 further comprising defining said physical object data by  
mathematically representing physical qualities of real-world objects.
- 25 13. The method of claim 12 further comprising defining said simulation world data  
by mathematically representing real-world physical principles.
14. The method of claim 8 further comprising computationally altering said game  
30 actions to cause predefined probabilities of certain game actions.

15. A method of operating a gaming machine comprising:  
accepting a wager;  
simultaneously simulating and displaying in real time an interaction of simulated  
physical objects using a representation of three-dimensional forms;  
5 determining an outcome of said interaction; and  
awarding a payoff if said outcome meets winning criteria.
16. The method of claim 15 wherein simultaneously simulating and displaying an  
interaction of physical objects comprises using simulation rule data to determine an  
10 interaction of simulated physical objects modeled using physical object data.
17. The method of claim 15 further comprising comparing said outcome of said  
interaction to a set of predefined outcomes to determination of whether said outcome  
meets winning criteria.
- 15 18. The method of claim 15 wherein simultaneously simulating and displaying said  
interaction comprises implementing a physics engine with a combination of a central  
processing unit and a 3D processor.
- 20 19. The method of claim 18 wherein simultaneously simulating and displaying said  
interaction comprises simulating and displaying a casino-style game selected from the  
group consisting of roulette, craps, slots, cards, and wheel of fortune.
20. The method of claim 18 wherein simultaneously simulating and displaying said  
25 interaction comprises simulating and displaying a sports game.
21. The method of claim 20 wherein said sports game is selected from the group  
consisting of baseball, basketball, soccer, hockey, football, bowling, and racing.

22. A method of operating a gaming machine comprising:
- accepting a wager;
  - implementing a physics engine using physical object data and simulation rule data to numerically simulate an interaction of physical objects, thereby creating
  - 5 a simulated interaction;
  - rendering a visual display of said simulated interaction using a two-dimensional representation of three-dimensional forms;
  - determining an outcome of said interaction; and
  - awarding a payoff if said outcome meets winning criteria.